

What is claimed is:

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1. A screen-noise eliminating apparatus comprising:
beam-spot-length control means for increasing or decreasing the vertical length of a beam spot on a display screen generated by an electron beam of a cathode-ray tube for displaying a TV signal;

vertical enhancement means for enhancing a given vertical-direction spatial frequency characteristic of said TV signal; and

noise elimination control means for controlling said beam-spot-length control means and said vertical enhancement means so as to compensate said vertical-direction spatial frequency characteristic according to the increase or decrease of said beam spot length.

2. A screen-noise eliminating apparatus as claimed in claim 1 wherein said noise elimination control means provides control in a manner so as to reduce spurious in said vertical-direction spatial frequency corresponding to a scanning-line interval, and enhance the high band of said vertical-direction spatial frequency.

3. A screen-noise eliminating apparatus as claimed in claim 1 further comprising second horizontal deflection means for modulating a scanning velocity of said electron beam in

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the horizontal direction wherein said noise elimination control means controls said second horizontal deflection means in a manner so as to reduce the high band of a horizontal-direction spatial frequency characteristic according to the increase or decrease of said beam spot length.

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4. A screen-noise eliminating apparatus as claimed in claim 3 further comprising horizontal enhancement means for enhancing a given horizontal-direction spatial frequency characteristic of said TV signal wherein said noise elimination control means controls said horizontal enhancement means in a manner so as to compensate said horizontal-direction spatial frequency characteristic according to the increase or decrease of said beam spot length.

5. A screen-noise eliminating apparatus as claimed in claim 1 further comprising feature detection means for detecting an edge of an image to be displayed from said TV signal wherein said noise elimination control means controls to reduce the extent of increase or decrease in said beam spot length upon an output from said feature detection means.

6. A screen-noise eliminating apparatus as claimed in claim 3 further comprising feature detection means for detecting an edge of an image to be displayed from said TV signal

wherein said noise elimination control means controls to reduce the extent of said modulation of the scanning velocity in the horizontal direction in the edge section of the image upon an output from said feature detection means.

7. A screen-noise eliminating apparatus as claimed in claim 1 further comprising a control information memory storing enhancement levels of the spatial frequency characteristic at respective positions on the screen wherein said noise elimination control means controls the increase or decrease of said beam spot length according to an output of said control information memory.

8. A screen-noise eliminating apparatus as claimed in claim 3 further comprising a control information memory storing enhancement levels of the spatial frequency characteristic at respective positions on the screen wherein said noise elimination control means causes to modulate said scanning velocity in the horizontal direction according to an output of said control information memory.

9. A screen-noise eliminating apparatus as claimed in claim 1 wherein said noise elimination control means controls said beam spot length to be lengthened in the vertical direction when the display screen is viewed from a distance closer than

an adequate viewing distance, and controls said beam spot length to be unchanged and said given vertical-direction spatial frequency characteristic and horizontal-direction spatial frequency characteristic to be enhanced when the display screen is viewed from a distance farther than the adequate viewing distance.

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10. A screen-noise eliminating apparatus as claimed in claim 1 wherein said vertical enhancement means comprises:

1H delay means for delaying said TV signal by one horizontal scanning line;

1-field delay means for delaying said TV signal by 1 field;

signal selection means for selecting an output of said 1-field delay means when a first control signal inputted from said noise elimination control means indicates an interlaced scanning signal, and selecting an output of said 1H delay means when said first control signal indicates a sequential scanning signal, and outputting said selected output;

first coefficient multiplier means for multiplying said TV signal by a first coefficient determined by a second control signal outputted from said noise elimination control means;

second coefficient multiplier means for multiplying the output from said signal selection means by a second coefficient determined by said second control signal;

third coefficient multiplier means for delaying the output from said signal selection means by 1H and multiplying it by a third coefficient determined by said second control signal; and

adders means for outputting a summed signal which represents a sum of the output of said first coefficient multiplier means, the output of said second coefficient multiplier means and the output of said third coefficient multiplier means.

11. A screen-noise eliminating apparatus as claimed in claim 4 wherein said horizontal enhancement means comprises:

fourth coefficient multiplier means for multiplying said TV signal by a fourth coefficient determined by a third control signal inputted from said noise elimination control means;

fifth coefficient multiplier means for delaying said summed signal by 1-pixel time and multiplying it by a fifth coefficient determined by said third control signal;

sixth coefficient multiplier means for delaying said summed signal by 2-pixel time and multiplying it by a sixth coefficient determined by said third control signal; and

adders means for outputting another summed signal which is a sum of the output of said fourth coefficient multiplier means, the output of said fifth coefficient multiplier means and the output of said sixth coefficient multiplier means.

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12. A cathode-ray tube display apparatus comprising:
a cathode-ray tube for displaying a TV signal;
electron-beam driving means for driving an electron beam
of said cathode-ray tube; and

screen-noise eliminating apparatus, wherein said
screen-noise eliminating apparatus comprises;

beam-spot-length control means for increasing or
decreasing the length of a beam spot on a display screen
generated by said electron beam in the vertical
direction;

vertical enhancement means for enhancing a given
vertical-direction spatial frequency characteristic of
said TV signal; and

screen-noise elimination control means for
controlling said beam-spot-length control means and said
vertical enhancement means so as to compensate said
vertical-direction spatial frequency characteristic
according to the increase or decrease of said beam spot
length.

13. A cathode-ray tube display apparatus as claimed in
claim 12 wherein said electron-beam driving means comprises
an electrostatic focus electrode, and said beam-spot-length
control means comprises a driving circuit for said

electrostatic focus electrode.

14. A cathode-ray tube display apparatus as claimed in claim 12 wherein said electron-beam driving means comprises an electromagnetic focus coil, and said beam-spot-length control means comprises a driving circuit for said electromagnetic focus coil.

15. A cathode-ray tube display apparatus as claimed in claim 12 wherein said electron-beam driving means comprises a second vertical deflection coil, and said beam-spot-length control means comprises a driving circuit for said second vertical deflection coil.

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